



433 Teams
ENT

17

Larynx II

Color index:

432 Team – **Important** – 433 Notes – Not important

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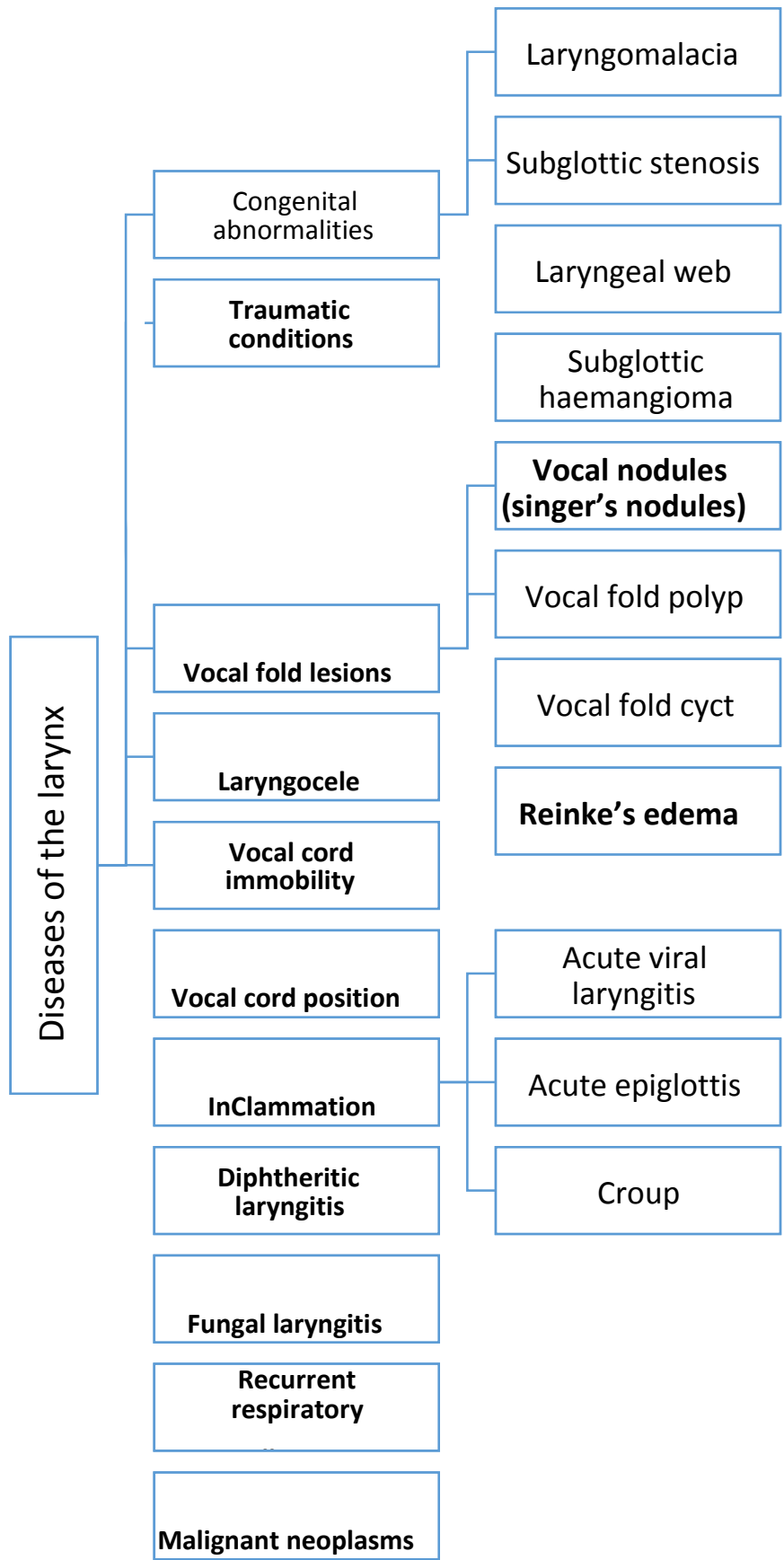
جامعة
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Objectives:

- Congenital diseases of the larynx (in brief).
- (laryngomalacia, web, subglottic stenosis, and hemangioma)
- Benign swelling of larynx (Singer's nodule, polyps, granuloma, J. L. papillomatosis)
- Acute and chronic laryngitis.
- Non-specific laryngitis
- Specific laryngitis (acute epiglottitis, croup)
- Laryngeal paralysis (unilateral and bilateral)

Mind Map



Congenital Abnormalities of the Larynx

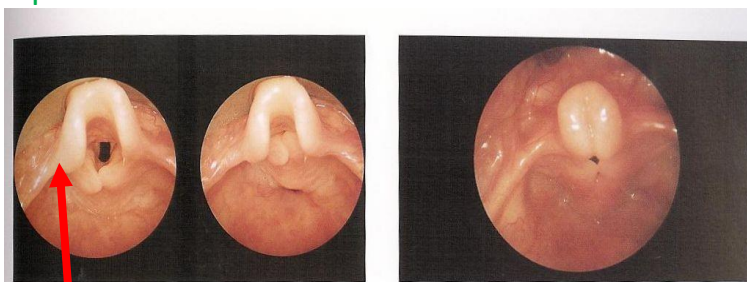
1- Laryngomalacia

- Most common cause of stridor in neonate and infants
- Laryngeal finding:
 - Inward collapse of aryepiglottic fold (short) into laryngeal inlet during inspiration
 - Epiglottis collapses into laryngeal inlet.
- SSX:
 - Intermittent inspiratory stridor that improve in prone position.
- DX:
 - HX and endoscopy “flexible endoscope through the nose” it can’t be diagnosed in the OR when the patient is sedated
- RX:
 - Observation
 - Supraglottoplasty
 - Epiglottoplasty
 - Tracheostomy

Most common laryngeal anomaly

Pathophysiology:
immature cartilage,
omega shaped epiglottis

Management:
observation,
epiglottoplasty, correct
GERD if present.



Omega shaped epiglottis

Normally in inspiration: The epiglottis is open and vocal cords are abducted

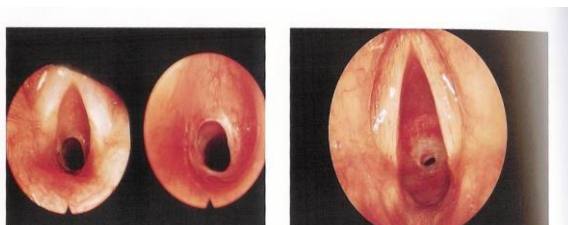
2) Subglottic stenosis

Incomplete recanalization, small cricoid ring

Can be acquired or congenital, acquired due to prolonged intubation.

- Types:
 - Membranous
 - Cartilaginous
 - Mixed
- Grades:
 - I <50%
 - II 51-70%
 - III 71-99%
 - IV complete obstruction (no detectable lumen)
- SSX:
 - Biphasic stridor “during inspiration and expiration “
 - Failure to thrive
- DX:
 - Chest and neck X-ray, flexible endoscope
- RX: tracheotomy

Grade I - II	Grade III - IV
Endoscope (CO2 or excision with dilation)	Open procedure: <ul style="list-style-type: none"> - LTR (Laryngotracheal reconstruction) - Ant cricoid split



2) Laryngeal web

Incomplete decanalization

- Types:
 - Supraglottic
 - Glottis
 - Subglottic
- SSX:

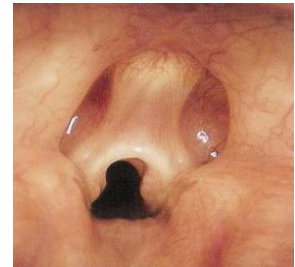
-- Weak cry at birth
-- Variable degrees of respiratory obstruction

--- On and off stridor

- DX: Flexible endoscope
- Rx:
 - No treatment
 - Laser excision
 - Open procedure + tracheostomy

Patient with Anterior laryngeal web → dysphonia

Patient with Posterior laryngeal web → dysphonia and stridor



Congenital



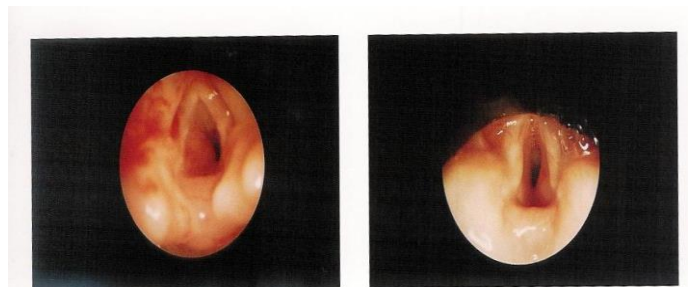
Iatrogenic

3) Subglottic hemangioma

Most common in subglottic space

--- 50% of subglottic hemangiomas associated with cutaneous involvement

- Types:
 - Capillary (typically resolve)
 - Cavernous
- SSX: **biphasic stridor**
- DX: endoscope
- RX:
 - Observation
 - Corticosteroid
 - **Propranolol (to decrease neovascularization)**
 - CO2 LASER



Traumatic Conditions of the Larynx

- Direct injuries (blows)
- Penetration (open)
- Burns (inhalation, corrosive fluids)
- Inhalation foreign bodies

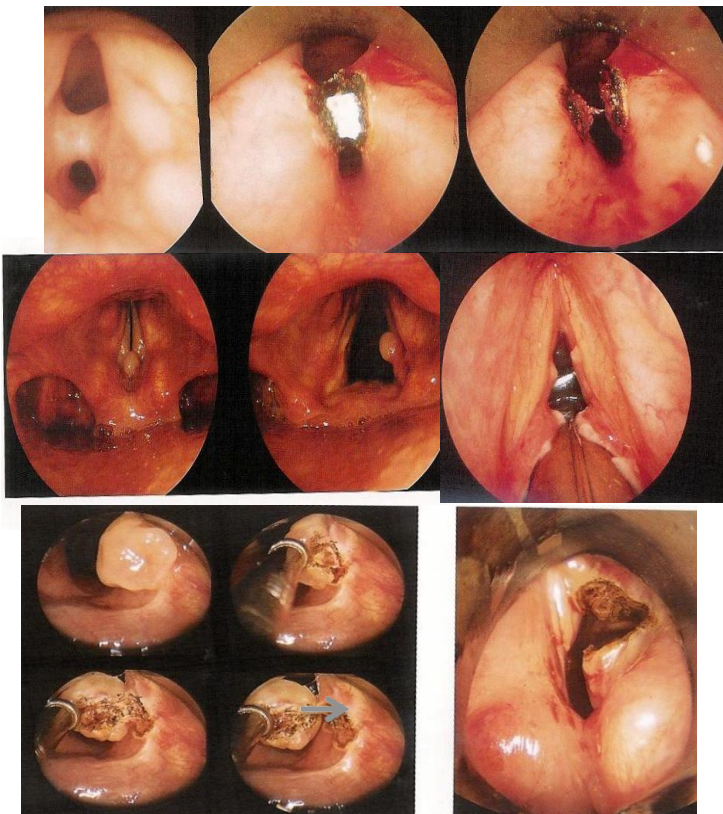


- Intubations injuries:
 - Prolonged intubation
 - Blind intubation
 - Too large tube
- Pathology:

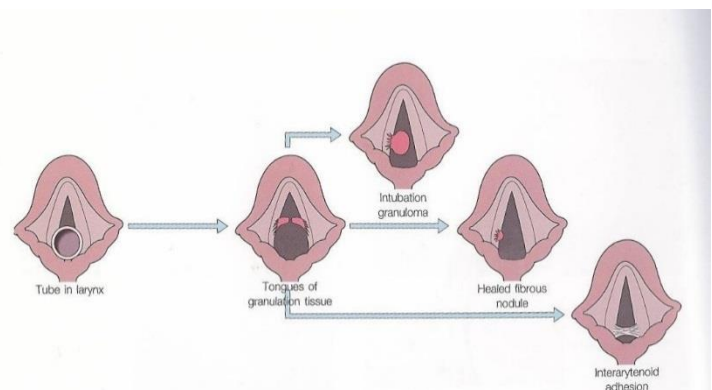
- Inhalation “sloughing and carbonized tissue”
- Give steroid, antibiotic and Anti-Reflux Drugs

Abrasion ► granulomatous formation ► subglottic stenosis

- SSX: hoarsness, dyspnea
- RX:
 - Voice rest
 - Endoscopic removal
 - Preventio



- Granuloma, Common with intubation or reflux
- Granulomas are benign lesions usually located on the posterior third of the vocal fold “vocal process”



- Big granuloma
- Usually they don't remove it If we remove it ----> 40% recurrent

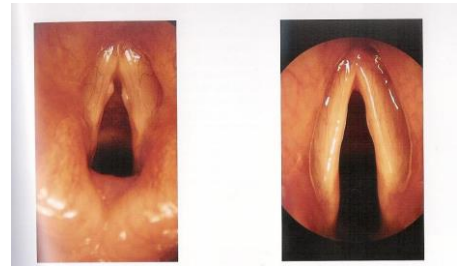
- Treatment:

Antireflux treatment, voice rest, lifestyle modifications, steroid therapy, no coffee or late eating

Vocal fold lesions secondary to vocal abuse and trauma

1) Vocal nodules (singer's nodules)

- At junction of ant 1/3 and mid 1/3
 - RX :
 - o voice therapy
 - o surgical excision (microlaryngoscopy)



2) Vocal fold polyp:

- Middle and ant 1/3, free edge, **unilateral (Usually anterior)**
- Mucoïd, hemorrhagic
- RX: surgical excision



3) Vocal fold cyst:

- Congenital dermoid cyst
- Mucus retention cyst
- RX: surgical excision



4) Reinke's edema

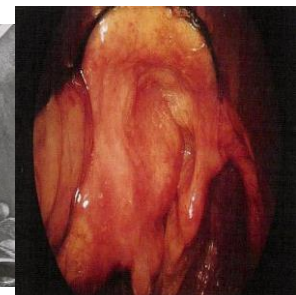
- RX:
 - o Voice rest,
 - o stop smoking,
 - o anti-reflux therapy
 - o Surgical excision



Accumulation of fluid in Reinke's space (Common in smokers)

Laryngocele

- Air filled dilation of the appendix of the ventricle, communicates with laryngeal lumen
- Congenital or acquired
- **Common site: ventricle**
- Types:
 - External: through thyrohyoid membrane
 - Internal
 - Combined
- Rx: marsupialization



Vocal cord immobility

- Causes:

Adult	
“Iatrogenic” Trauma	Non-iatrogenic trauma
cervical surgery	Tumor
Thoracic surgery	Medical disease
Skull base surgery	- CVD
Other medical procedure	- Neurological
	- Developmental abnormalities
	- Drug neurotoxicity
	- Granulomatous diseases
	Idiopathic

Children	
Arnold chiari malformation	Birth trauma “Forceps delivery”

- SSX:
 - Dysphonia
 - Choking
 - Stridor

Vocal cord position

Median, paramedian, cadaveric

- Rx:
 - Self-limiting or permanent paralysis
- For medialization:
 - Vocal cord injections
 - Gelfoam, fat, collagen, Teflon.
 - Thyroplasty type 1 **silicon block** “permanent”
- For lateralization:
 - cordotomy
 - Arytenoidectomy “partial”
 - Tracheotomy

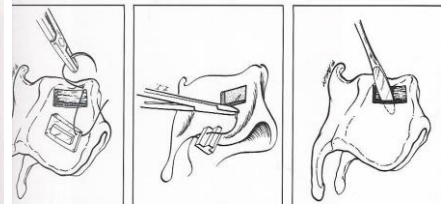
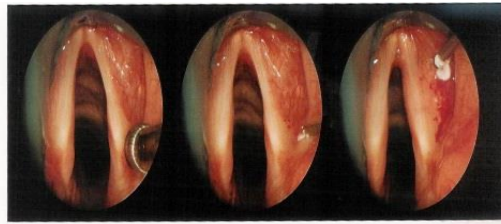
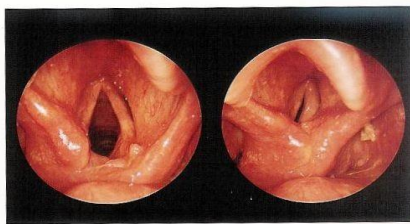
Vocal cord paralysis can be unilateral or bilateral.

Unilateral → One work and the other is paralyzed with gap in between → affects voice (Breathy)

Treatment: medialization “inject the paralyzed cord to inflate it → closure of the gap.

Bilateral → **Adduction of the cords can't open** → stridor, voice is fine.

Treatment: lateralization.

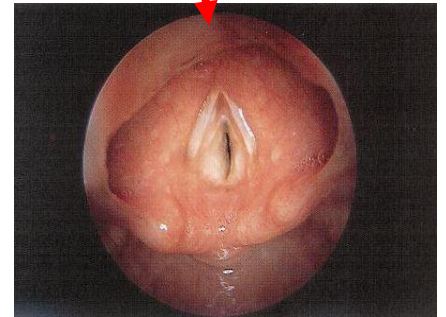
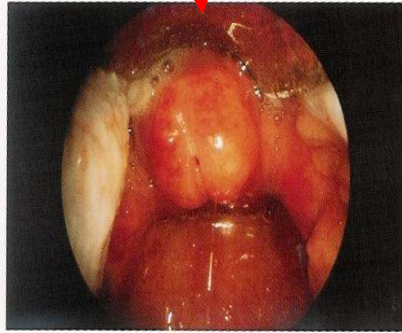


Arytenoidectom



Inflammation of the larynx

	Acute viral laryngitis	Acute epiglottitis (Important)	Croup (Laryngotracheobronchitis)
	- Rhinovirus - Parainfluenza	- Haemophilus influenza B (2-6 years)	Primary involves the subglottic - Parainfluenza 1-5 years
SSx	Dysphonia, Fever and Coughing	Fever, Dysphagia , drooling, dyspnea, sniffing position, no cough and normal voice	-Biphasic stridor, fever, brassy cough, hoarsness and no dysphagia
Dx		X-ray (Thumbprint sign)	X-ray (Steeple sign)
Rx	Conservative	- Do not examine the child in ER - Intubation in OR - IV Antibiotics - Corticosteroids (for edema)	- Humidified O2, racemic epinephrine and steroid



Diphtheritic laryngitis

- Causes:
 - Corynebacterium diphtheriae
- SSx:
 - Cough, stridor, dysphonia, fever
 - Greyish –white membrane
- Treatment:
 - Antitoxin injection
 - Systemic penicillin
 - Oxygen
 - Tracheostomy

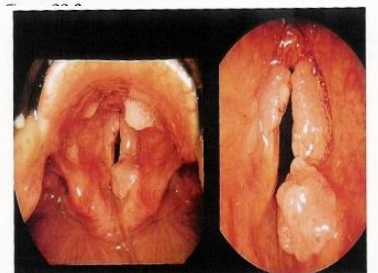
Fungal laryngitis

- Immunocompromised
- Candidiasis, aspergillosis
 - SSx:
 - Dysphonia, cough, odynophagia
 - RX: antifungal regimen



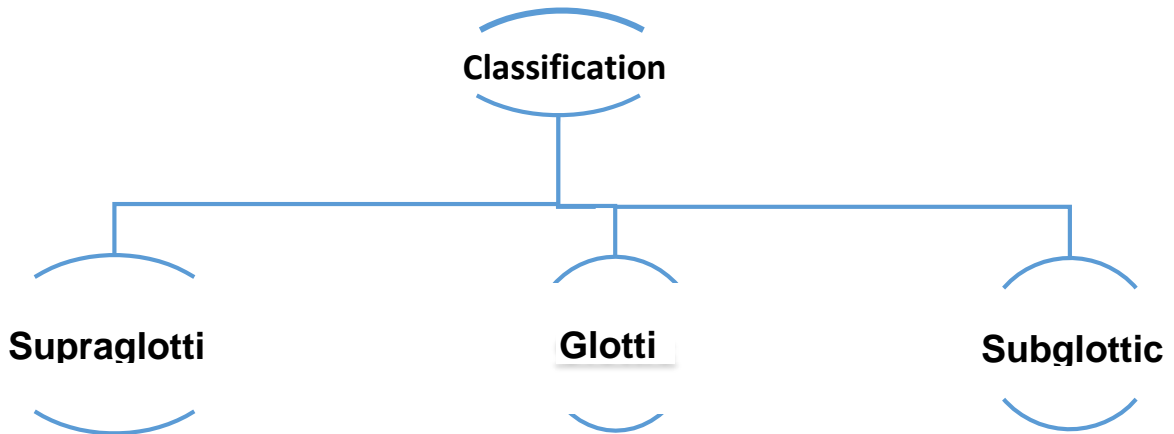
Recurrent respiratory papillomatosis (Important)

- 2/3 before age 15
- Rarely malignant change
- HPV 6-11 (common)
- HPV 16-18 (malignancy)
 - Risks:
 - o Younger first time mother (condyloma acuminata)
 - o Lesions: wart like (cluster of grapes)
- Types:
 - Juvenile “affect children and it’s very aggressive”
 - Senile
- SSX:
 - Hoarseness, stridor
- RX:
 - Laser excision, microdebrider
 - Adjunctive therapy:
 - Cidofovir,



Malignant neoplasms of the larynx

- 1-5 % of all malignancies
- All are **squamous cell carcinomas**;
 - SSx: Hoarseness, aspiration, dysphagia, stridor, weight lost
 - Risks: Smoking, alcohol, radiation exposure.

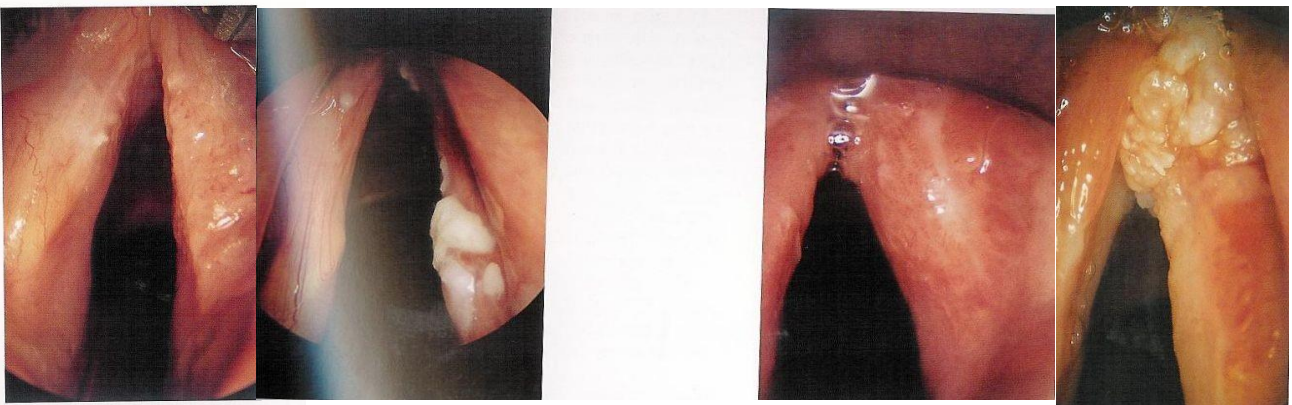


- 30-40-% of laryngeal Ca
- 25-75% nodal metastasis

- 50-75%
- Limited regional metastasis

- Rare
- 20% regional metastasis

- RX:
 - Radiotherapy
 - Hemilaryngectomy. Total laryngectomy + neck dissection



Summary

Congenital abnormality	Pathophysiology	Symptoms	Diagnosis	Management
Laryngomalacia	Most common cause of stridor in neonate and infants	Intermittent inspiratory stridor that improve in prone position.	HX and flexible endoscope	<ul style="list-style-type: none"> -- Observation -- Supraglottoplasty -- Epiglottoplasty -- Tracheostomy
Subglottic stenosis	Incomplete recanalization, small cricoid ring	Biphasic stridor Failure to thrive	Chest and neck X-ray, flexible endoscope	Tracheotomy <ul style="list-style-type: none"> -- Grade I & II: Endoscope (CO2 or excision with dilation) -- Grade III & IV: Open procedures: <ul style="list-style-type: none"> -LTR or CTR -- Ant cricoid split
Laryngeal web	Incomplete decanalization	<ul style="list-style-type: none"> -- Weak cry at birth -- Variable degrees of respiratory obstruction -- On and off stridor 	Flexible endoscope	<ul style="list-style-type: none"> -- No treatment -- Laser excision -- Open procedure + tracheostomy
Subglottic hemangioma	<ul style="list-style-type: none"> -- Most common in subglottic space -- 50% of subglottic hemangiomas associated with cutaneous involvement 	Biphasic stridor	Endoscope	<ul style="list-style-type: none"> -- Observation -- Corticosteroid -- Propranolol -- CO2 LASER

Summary

Vocal Cords: Polyps vs. Nodules (from Toronto notes)

Polyps	Nodule
Unilateral, asymmetric	Bilateral
Acute onset May resolve spontaneously	Gradual onset Often follow a chronic course
Subepithelial capillary breakage	Acute: submucosal hemorrhage or edema Chronic: hyalinization within submucous lesion
Soft, smooth, fusiform, pedunculated mass	Acute: small, discrete nodules Chronic: hard, white, thickened fibrosed nodules
Surgical excision if persistent or in presence of risk factors for laryngeal cancer	Surgical excision if refractory

Vocal Cord Paralysis:

Unilateral: affected cord lies in the paramedian position, inadequate glottic closure during phonation > weak, breathy voice.

Usually medializes with time whereby phonation and aspiration improve. Treatment options include voice therapy, injection laryngoplasty (Radiesse), medialization using silastic block.

Bilateral: cords rest in midline therefore voice remains good but respiratory function is compromised and may present as stridor.

If no respiratory issues, may monitor closely and wait for improvement. If respiratory issues, intubate and will likely require a tracheotomy.

Benign Laryngeal Papillomas (from Toronto notes):

Etiology

- HPV types 6, 11
- possible hormonal influence, possibly acquired during delivery

Epidemiology

- biphasic distribution: 1) birth to puberty (most common laryngeal tumour) and 2) adulthood

Clinical Features

- hoarseness and airway obstruction
- can seed into tracheobronchial tree
- highly resistant to complete removal
- some juvenile papillomas resolve spontaneously at puberty
- may undergo malignant transformation
- laryngoscopy shows wart-like lesions in supraglottic larynx and trachea

Treatment

- microdebridement or CO₂ laser
- adjuvants under investigation: interferon, cidofovir, acyclovir
- HPV vaccine may prevent/decrease the incidence but more research is needed

Laryngeal Carcinoma (from Toronto notes):

Etiology

SCC most common 3 sites:

1. Supraglottic (30 to 35%)
2. Glottic (60 to 65%)
3. Subglottic (1%)

- Mean age: 45 to 75 M:F = 10:1

- Risk factors:

Smoking/EtOH

HPV 16 infection strongly associated with the risk of laryngeal squamous cell cancers

- **Clinical Features**

Dysphagia, odynophagia, globus

Otalgia, hoarseness, Dyspnea/stridor

Cough/hemoptysis

Cervical nodes (rare w/ glottic CA)

- **Diagnosis:** Laryngoscopy CT/MRI

- **Treatment:** 1ry radiation --- 2ry surgery --- 1ry surgery for bulky T4 disease

MCQs

1- Commonest causative organism leading to Acute Epiglottitis

- A. Staphylococcus aureus
- B. Streptococcus
- C. H Influezae B
- D. Corynebacterium diphtheria

2- Steeple sign is seen in:

- A. Acute laryngotracheobronchitis
- B. Acute epiglottitis
- C. Retropharyngeal foreign body
- D. Quinsy

3- Diphtheria causes:

- A. Myocarditis
- B. Peripheral neuritis
- C. All of the above

Answers:

- 1- C
- 2- A
- 3- C

Done By:

Othman Abid

